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A
FEW WORDS
IN FAVOUR OF PROFESSOR POWELL,
AND THE SCIENCES,
AS
CONNECTED WITH CERTAIN EDUCATIONAL REMARKS,

(CHIEFLY IN THE WAY OF EXTRACT,)

BY

PHILOMATH: OXONIENSIS.

(The Revd. Richd. Walker, Fellow of Magdalen College, Oxon.

> If general education be acknowledged as the legitimate design of an University, it is impossible to understand in what it is to consist, unless in going through a course of at least all the principal branches of what constitute the liberal sciences, or more precisely those which afford equal exercise to all the chief intellectual faculties, and tend to enlarge the understanding, by presenting, at least in their more comprehensive principles, the leading departments of human knowledge.—POWELL.

OXFORD.

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1832.

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SYNOPSIS.

Sketch of Professor Powell's pamphlet.—Hints on some material points of a good Education.—Arguments, by way of extract, so arranged, as to render it highly probable, that the Professor judges correctly, in requiring, that Mathematical and Physical Science, do, more or less, constitute a part of an Education System. In this extractive part, the value of the Classical Languages, in their cultivation, is granted.—The importance of daily *Composition*, in Latin and in English, is pointed out.—The worth of *Ethical Science* is admitted, and the uses of *Mathematical and Natural Science*, in preparing the Student for the acquisition of *Mental Science*, (the highest object, except *Religion* and *Morals*, to which the mind can be directed,) are perspicuously exhibited.—Hence the intrinsic value of *Mathematical Studies*, undeniably appears, viewed merely, as *preparatory to Mental Philosophy*, which last branch of knowledge is shown to be of *very high importance*, and next to the study of *Religion*.—Concluding Prospective Remarks.

CORRECTIONS.

Page 11, line 11, from the top, for *should*, read *could*.

Page 13, line 11, from the top, for *to*, read *in*.

A FEW WORDS,

&c.

The public have been recently presented with an interesting pamphlet*, from a man of sound sense, and of high scientific acquirements. Although reluctant to step forward in a question, in which we do not presume to offer any thing from our *own* resources of *decisive* argument, yet we trust our readers will not deem their time wholly misemployed in the calm perusal of a brief abstract of the Professor's principal positions, accompanied by certain cursory observations bearing on University education, together with an arrangement of arguments in the way of extract; arguments from a high literary quarter, tending to bear out the Professor in his important conclusion, that the Mathematical, and Physical Sciences, ought unequivocally to constitute an integrant part in a system of education.

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* "The Present State and Future Prospects of Mathematical and Physical Studies in the University of Oxford, considered in a Public Lecture, introductory to his usual course, in Easter Term 1832, by the Rev. Baden Powell, M. A. F. R. S. of Oriel College, Savilian Professor of Geometry."

To proceed.—From the Professor's statements it appears, that the attendance upon lectures, in the Mathematical and Physical Sciences, was usually far more numerous than at present, and that some knowledge of these subjects used almost invariably to be acquired by every one in the University, who studied at all—that the tone and spirit of the old system of the University Schools, distinctly recognized both in theory and practice the principle, that scientific studies were to be regarded *not as an exclusively distinct department, to be cultivated to a great extent by a few of particular genius*, but always as one portion of a comprehensive series of the liberal Sciences, to be gone through as constituting the appropriate course of the *faculty of Arts, by all Candidates for Degrees in that faculty.* (p. 6.)

In after time, the Professor informs us that the very idea of a *comprehensive* system of Academical Study seems to have been lost. (p. 6.) The Oxford Examinations being subsequently divided into *two* departments, and *no more,* the whole of Academical learning appears to consist in the Classics and Logic.

to which the Mathematics *may* be added by the few who have a genius that way.

At page 10, we are informed, " that if a considerable proportion of the Undergraduates go through a part of the Elements of Euclid, it is chiefly by compulsion, without an idea beyond the letter of the text, and this often learned by rote: if a smaller proportion advance a little beyond this, having no adequate stimulus to counterbalance their difficulties, they soon abandon the pursuit: and if a few persevere to the higher parts, they do so only to that precise amount, which is to secure them from falling into the second or lower Classes; or finally with a view to the Mathematical Scholarships."

From page 12, it appears that " the whole (Oxford) system, if system it can be called, in by far the great majority of cases, is limited to one confined routine of Classical literature, in which none of the higher intellectual powers are brought into play, and those which are, often to little good purpose."

At page 14, the author laments that want of *Mathematical preparation* in elementary knowledge *previous to admission into the University*; and this want of *preparation* is an evident cause of the neglect of Mathematical studies in our *Alma-Mater*.

At page 15, it is proposed that those minds which, through want of the power of mental abstraction, appear physically incapable of apprehending geometrical demonstrations, should be exercised in some other branches of science, level to their capacities; for example, Algebra, or rather the results of experimental investigation, and the first principles of Natural Philosophy.

At page 16, the *system of public Examinations* is described as a deeply-seated cause of the neglect of Mathematical Studies—and *Classical* Studies are affirmed to be the passport to the whole range of Academical as well as Ecclesiastical preferment.

The author, at page 17, enters on the consideration of the probable remedies for Mathematical and Physical deficits and delinquencies, in regard to Mathematical and Physical Science, in the Oxford course of studies, and he points out means of improvement. He admits that elementary Mathematical instruction is on the increase, at some of our public Schools, and that all the principal Colleges are now possessed of able Mathematical Tutors, desirous of carrying forward their pupils, and of diffusing a general taste for Mathematical pursuit: and we rejoice in this statement.

We cordially agree with the Professor in the importance of combining the *Professorial* and *Tutorial* systems of instruction. Such a union might, we conjecture, lighten, under certain regulations, the increased labours of the Tutor, and would add infinitely to the efficiency and utility of Professors.

The improvement in the public examinations, so far, at any rate, as Mathematical and Physical pursuits are questions, should, the Professor contends, be so regulated as to encourage *the many* to pay some attention to these pursuits so often recommended, instead of leading a few only, to pursue them to a high degree; so as to make an acquaintance with at least the principles of science become as *essential a part of a liberal education*, as a knowledge of the Classics is at present considered to be.

As an appropriate remedy for improving the Oxford Academical course, an expedient is proposed (p. 22.) "of making some knowledge, however little, of some parts *either* of Geometry, *Algebra*, or *any of the branches of experimental Science*, at the entire option of the Candidate, *obligatory for admission to a Degree*: of printing the names of all Candidates, distinguishing those who excel even in the lowest Class, and of breaking up the wide intervals between all the Classes, by making subdivisions in them wherever obvious differences in the merit of the Candidates require it."

The author's object is *not* to advance any claims for the Mathematical and Physical sciences, *superior* to the claims of any other branches of knowledge, but simply to obtain an *equal* attention, which ought to be urged for *every one* of those departments which are acknowledged as legitimate branches of Academical study, (p. 23.) from a regard to that *aggregate* of knowledge in its different branches, which constitutes a *general* education; and the Professor well remarks, in an extremely good passage, which we quote at length: that " if *general* education be acknowledged as the legitimate design of an University, it is impossible to understand in what it is to consist, unless in going through a course of at least all the principal branches of what constitute the liberal sciences, or more precisely those which afford equal exercise to all the chief intellectual faculties, and tend to enlarge the understanding, by presenting, at least in their more comprehensive principles, the leading departments of human knowledge. But in what sense the mere routine of continuing to read a certain portion of the Greek and Roman poets and historians, with the addition of learning by rote a few technicalities of Logic, can be called general education, or by what perversion or delusion this can be considered as answering the purposes of Academical instructions, or fulfilling the requisitions of an Academical course for supplying the various departments of Church and State with fit and able men, duly qualified to fill and to adorn them, is difficult to say."

Without insisting upon the acknowledged utility, and extreme importance of Mathematical and Physical studies, and urging their claims as imperatively called for by the spirit of the present times, the Professorial Author contends, that *the neglect of these studies* (in Oxford) *is a modern innovation on the spirit and principle of the ancient statutes*; and this point, we think, appears to be made out by a reference to the code of University Statutes.

It appears, from page 26, that an augmented attention to scientific pursuits would not *interfere* with other studies, as so wide a waste of time is at the disposal of too large a portion of Under-graduates; of time, not only lost, but even wasted, in the author's words, " in pursuits too often vicious."

The last position of the Professor, in favour of an additional attention to Physical and Mathematical Science, is of *momentous* consideration, and of ready observation to all around—that " scientific knowledge is rapidly spreading *among all classes except the* *higher*; and the consequence must be, that that class *will not long remain* THE HIGHER." Such are the leading positions of this sensible and interesting pamphlet.

And here the reader will allow us to introduce, and add a few cursory notions in regard to certain points, bearing on the plan and discipline of Oxford Education; notions collected from our own humble observation, or culled from the wisdom of superior and enlightened writers. It is hoped, and with great deference, that what is here brought forward may lead to Academic improvement, and at the same time tend to strengthen the Professor's main opinion, that—the Physical and Mathematical Sciences should be made, more or less, the business of education for *all*, and that *all* should give public proof of their having acquired *some* tincture of knowledge from those important subjects, so often mentioned in the course of our remarks.

In every system of Education a distinction should be drawn between what is incumbent upon *all* to learn, and what is required for honours, or eminent attainments. But, however this may be, the *grand* objects of Education should be to render men virtuous, and public spirited upon Christian principles. With these views, Lectures, in a well-connected course, in every society, on Natural, and Revealed Religion*, with correspondent written compositions, and exact, and almost continuous examinations on the subjects under enquiry, should be carried on, for the Student's religious advancement.

Christian Morals†, than which none better can be discovered, should take the lead in an Ethical course; should, we are of opinion, be uniformly so taught, and be so compared with the Aristotelian and Ciceronian systems, as to evince the superiority of the Christian Morals: and to all our teaching, we should join the supposed discoveries of recent times to the deductions of ancient wisdom.

The *duties* of the different degrees in society should be largely insisted on:—That we are born; not for ourselves alone, but for our country, is a Platonic maxim, which should be *particularly* impressed on the minds of those, who are destined by their talents and station to hold important trusts in the commonwealth. *Again;* let those who are destined to take conspicuous positions in the community, be early initiated, at our

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* And especially by the diligent study of such works as Paley's Natural Philosophy, and his Evidences, and by attention to certain portions of Samuel Clark, and Bishop Butler.

† A new and improved edition of Magirus's Corona, an invaluable commentary on Aristotle's Ethics, is much wanted.

Universities, in those principles, which tend to make states flourish, and to render the people, the greater mass, *happy* and *contented.* — Let frivolous amusements be discouraged and *prevented.*—Let a *system* of *Economics* be introduced to prevent the poorer and inexperienced Student from vieing with fortune and folly:—let the expenses of all be so *controlled* and *regulated*, as to prevent, so far as may be *possible*, waste and dissipation, which, to a moral certainty, are followed in their train, by bitter repentance and pecuniary embarrassment in subsequent life.

To pass to a less weighty part of our subject—It is obvious that deserved attention is paid to the construing and analysis of the Classics; and, no doubt, the Greek and Latin Classics afford excellent models for writing, and embrace much practical wisdom. We would, in addition to such studies, propose that *very frequent* attention be given to written compositions, both in Latin and in English, bearing on each College Lecture. The study and analysis of sound and nervous writers, of the stamp of Demosthenes, Isaac Barrow, and Bishop Butler, accompanied by the assiduous exercise of the pen, in attempts at original composition, will tend greatly, it is evident, to give a correct mode of thinking, and to form a manly style. Nor would we by any means wish to banish that *practically* useful work.

Aristotle's Rhetoric. In connexion with the subject of Latin and Prose Composition, we cannot but lament, that the writers of the age of Cicero and Cæsar are not sufficiently held up to all Students as models of imitation[*], and that the *immoderate*, and, therefore, absurd practice of Latin versifying is not discouraged. For to this practice, early and excessive attention to Latin versification, is owing that barbarous poetic-prose style which so much prevails. We cannot pass by, in these desultory remarks, two other points of Education, which appear to us desirable objects of cultivation for those Students who are intended for the priesthood. We fervently wish, then, that a knowledge of the *Hebrew Language*, at any rate, in its elementary parts[†], were made incumbent upon every Student intended for Holy Orders; as we cannot suppose that any person should consistently enter upon the holy office of instructing others in Religion, without a due acquaintance with the Oracles of Divine Wisdom in the Original Tongue: much less can we allow, that any man should pretend to the title of a *critical* Divine, who is skilled in the Greek and Latin languages, without a knowledge of the punctuated Hebrew.

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[*] The elegant classical school of Wyttenbach and Ruhnken, is the delight of every man of taste and learning.

[†] Salome's Hebrew Grammar, or Yeates', with Freys', and Nahum Joseph's Robertson's Dictionary, are highly useful to the tyro in Hebrew, as also, the interlineary versions of Montanus, and the work of Bythner.

In these days of Reformation, something beyond the Latin Vulgate, and the Greek Septuagint, are required. It would be invidious to point out the unhappy blunders of Divines, ignorant of Hebrew. Let us rather rejoice at the devout liberality of those individuals, who have lately founded Scholarships for this pursuit:—and we indulge a hope, that one individual*, known for his zeal and beneficence in the cause of Religion and Sacred Learning, may be induced to establish a Professorship for the *express* purposes of teaching and encouraging *Pulpit Oratory*, including *Elocution;* branches of study and practice, almost overlooked by the Church of England, yet cultivated with much powerful effect by many Christian Ministers among our Dissenting brethren.

We have, hitherto, adverted to a few important topics, connected with University Education, and hasten to advance those reasonings, which to ourselves appear to possess great weight in fixing the truth of Mr. Powell's assertion, that Mathematical and Physical Pursuits should form a part of every system of Education.

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* Dr. Ellerton.

We entirely agree with Mr. Powell on the importance of Natural and Mathematical Science, as constituting part of a liberal education. We conceive that without a certain infusion of such studies, it is in vain to look for any thing like well regulated minds:—in short, we concur with *Locke*, that Mathematics should be studied by *every* Student, up to a certain point; not so much to make men mathematicians, as to make them rational beings*. Should any one be curious to see the question, of the value and connexion of Classical and Mathematical studies, discussed with clearness and with taste, we confidently refer him to an Oxford Prize Essay, by a Gentleman of Balliol College, lately published, "On the Union of Classical and Mathematical Pursuits."

Whether Students should begin with Physics, or, in other words, Natural Philosophy, and gradually mount up to the Philosophy of Mind, we leave other evidence to settle, and proceed to bring into the field, after a little preliminary observation, those arguments which, in our mind, bear out the Professor in his great conclusion, that the branches of knowledge for which he is contending, should make integrant items of a system of University Education.

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* See Locke's Conduct of the Understanding.

Now the branches of Education may be arranged under three great divisions, Moral and Religious, Physical, and Intellectual. Without dwelling upon that important branch of Education, the Physical, which has for its object the strengthening of the bodily powers, by gymnastic exercises, suitable diet, &c. we pass to the first division of the subject, which we deem the most important. We would lay the foundation of Religion broad and deep, and upon the eternal basis of *Religion* and *Truth* we would build the solid superstructure of Moral Obligation, and Moral Duties. For " *Religion* comprehends at once every *motive* both of virtue and of private interest, that can either direct or support the heart in every part of conduct; joins in perpetual union our duty and our happiness, and makes the universal scheme of things consistent, beautiful, and good *."

Under the head of *Intellectual* Education, we allow that the study of the Greek and Roman languages should hold a distinguished place, because such study cultivates " a habit of patience, of attention, of investigation, of accuracy, of discrimination, and of ingenuity; puts us in possession of a key to ideas contained in the languages studied; gives us greater power in the use of our own language, affords the acquisition of numerous data for that branch of Mental Philosophy which respects language."

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* Archbp. Secker.

" *History*, we allow, produces or cultivates the habit of pursuing with accuracy a series of connected events or phenomena ; of tracing causes from effects, and of observing the operation of causes, either singly, or in their various combinations, and has a tendency to obliterate national prejudices of almost every hue. Again, we are desirous that a due and almost daily attention be given to the practice of *Composition*, both in the Latin and English languages, because we believe " the practice of composition to be highly valuable, inasmuch as it enables us to benefit others by our mental attainments; to judge, also, of the extent and utility of these attainments; to command our knowledge; and to make that knowledge clear and substantial. Habits of correct composition are almost necessarily productive of precision in our ideas, and of perspicuity in our reasonings; they prevent their possessors from resting satisfied with superficial notions ; and they force them to think closely."

" But if *Mental* Science—if the philosophy of the human mind be the highest scientific object of human knowledge, to which the young can be directed ; (on the advantages of which we will presently enlarge, in the words of the same anonymous writer;) and if the best groundwork for the pursuit of Mental Science, be an accurate judgment, a discriminating, penetrative intellect, and a habit of correct and cautious reasoning, and if the attainment of all these excellencies be found in the study of the Mathematical and Physical Sciences, it follows, as an inevitable consequence, that these parts of knowledge should be made incumbent on *all* to learn, and on *all* to give public proof of a certain acquaintance with them. Now, we maintain, in the words of a writer, whose words and reasoning we are all along pursuing and quoting, that "Mathematical Science forms one of the higher branches in the tree of Mental culture. Even the lowest branch of Mathematics, *Arithmetic*, is not without its utility, in the culture of the human mind; for, the commencement of habits of clear perception, of abstraction, of regularity and correctness in practice, of acuteness, of using definite means in order to attain definite ends, and of acting upon general rules, may be reasonably expected from the proper mode of learning this science: and it becomes an introduction to scientific investigation. Again, *Algebra* possesses nearly the same advantages, and in addition to them, others more important to a higher degree of Mental culture. *Algebra* generates the power of invention and combination, and it accustoms the mind to general reasoning, at the same time leaving it the power to check and correct that reasoning at every step. *Geometry* forms a habit of clear and cautious reasoning. Geometry serves as a corrective to the wild flights of imagination, and gives proportional vigour to the judgment."

" If there were nothing valuable in the Mathematical Sciences for the uses of human life, yet they are well worth our study; for by perpetual examples they teach us to conceive with clearness, to connect our ideas in a train of dependance, to reason with strength and demonstration, and to distinguish between truth and falsehood. *Something* of these sciences then should be studied by every one." — Another reason for pursuing Mathematics in a system of Academical Education is, that Mathematics are also useful in subserviency to *Natural Philosophy.*

To describe the phenomena of the universe, to investigate their causes, and the connexion of these causes, are the principal objects of this science. To mention these objects, is nearly all which is necessary to indicate its valuable effects on the mind. The habits of accuracy and persevering observation, of investigation, of abstraction, and of correct reasoning, are more or less produced and cultivated by the study of the *Philosophy of Nature.* This philosophy furnishes abundant scope for the most sublime speculations, and calls forth the noblest exercises of the imagination, yet restrains the mind within the limits of reality. *This Philosophy* carries us beyond the boundaries of sense, and lessens our interest in *self*, by increasing our concern with every thing around us. *This Philosophy* enlarges the comprehension of the soul; for it offers for contemplation the laws of the universe. It prepares the Student for an acquaintance with the human mind; for the strictness with which its investigations are conducted, prevents that wildness of theorising, which is the bane of science, and forms the habit of cautiously attending to phenomena, in order to ascertain the general laws which regulate them. Natural Philosophy aids the cause of Religion; for it accustoms the mind to seek for the causes of observed appearances, and leads it from design and regularity to infer an *Intelligent* FIRST CAUSE AND LORD OF ALL. If such then be the advantages of Mathematical and Physical Studies, can we doubt of their importance in every system of education? can we waver in declaring that they ought to *make a modified part* of every system, and that *public proof* should be given by each individual, not only that he has been *taught*, but has, more or less, *learnt* also, a portion of those parts of knowledge?

From what has been advanced, the study of Mathematics and of Natural Science appears to present the best groundwork for the pursuit of *Mental Science,* which, according to some, should form the *last* part of education. And let it be observed, in the words of the same writer, that habits of reflection and good sense are all which is essential to the beneficial pursuit of *Mental Science;* and with these, *such science* will in all cases lead to results highly important to individual welfare, and to individual usefulness: for the *young*, in particular, will be led, by an acquaintance with the practical *laws of the mind,* with Mental Science, to perceive how much their present conduct affects their future conduct, and future happiness; to perceive the importance of avoiding a frivolous employment of their time, without any end beyond mere amusement; to perceive the impossibility of indulging in vicious gratifications, without lessening their means of happiness, and checking their progress towards excellence. Hence, the young also will learn how habits are formed, almost imperceptibly, and when long exercised, how exceedingly difficult it is to eradicate those habits. From the study of *Mental Philosophy,* to which *Mathematics* and *Natural Philosophy* should be preliminary, the young will learn to consider the formation of habits, as requiring, therefore, their *utmost circumspection.* They will be enabled to discern what habits of thought and feeling are baneful, what useful; what means of happiness should be regarded as of primary value, what should be regarded as secondary only. In short, there can be no hesitation in affirming, that, *next* to the immediate pursuits of *Religion,* to which the laws of the mind direct, a judicious acquaintance with those laws of mind, is the most important means for the right employment of that period of life on which the happiness of our existence, in a great measure, depends," in this world and in the next.

In an enlarged and improved plan of Education, upon which we have glanced in these remarks, we are aware that an increased exertion would be called forth on the part of teachers, but we honestly believe that all additional and irksome toil might be considerably diminished by applying, to a wider extent, that operative principle, the *division of labour.* There will never be wanting a succession of pious talented, yet not rich, individuals, desirous of liberal employment, well aware of the awful responsibility of their duties under the eye of the *Supreme Being.* An additional number of such men should be enlisted in the work of Education, and a remuneration of their labours might be realized by abridging the expenses of frivolity and luxury, by transferring the wages of extravagance to the payment of the instructors in piety, virtue, and liberal knowledge. And should that union of the Professorial and Tutorial systems be constituted upon the plan (somewhat modified) of the late able *Professor Jardine**, we are confident that a stimulus would be given to most Students, which would ensure attention, rouse dormant talent, and develope even the powers of the most *humble* intellect.

In an age like the present, when every mechanic is taught to think, and to read, and to write, and the all-commanding press is free and loud, it is manifest that every nerve must be strained, on the part of the public seminaries of Education, to maintain their ground on the grappling arena of intellect. We live in an age, in which the *why* and the *wherefore* of most things are diligently sought out, in which the rights of society are investigated, the tenure of property is examined, and the *utility* of establishments is demanded,—hence the incumbent necessity, as we are anxious to uphold our institutions, to *better* them—to bring them as near to perfection as human wisdom can attain—to render them so available for the great ends and objects of Education, that even enemies may feel and acknowledge their value,—for the growth and dissemination of Christian principles, for the formation of correct thinking, and for the diffusion of comfort and happiness among all gradations of the body politic.

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* See Jardine's Outlines of Philosophical Education.

At the same time, we are no abettors of hasty, crude, and undigested schemes of attempted amelioration: but we indulge a hope, that piety, intellect, and liberality, of which we are not without our proportion, are at this season busily employed:—that they are exploring and collecting educational materials, both from the past and present records of information,—that they are weighing the *practical* results of *imperative* changes,—and that, finally, before many years shall have glided away,—this *classic* cradle for Divines, Statesmen, and Philosophers, may gradually be transformed to a revered temple of *extended* Learning, and of multifarious *Science.*

NOTES.

Page 15.—We concur with *Locke*, &c.] " I look upon *Euclid*, says Bishop Watson, as the best possible logic, and I shall think two months of your young man's time excellently spent in being able to demonstrate, at sight of the scheme, every proposition in the first book; and if he never went further in Mathematics, he would have *acquired the habit of clear reasoning, and attentive reading*."—The judicious *Quintilian* observes, that Geometry not only exercises the reason, sharpens the understanding, and generates a quickness of perception, but that *in the very learning* of it, advantage arises to the mind: " Sed prodesse eam, non ut cæteras artes, cum perceptæ sint, sed *cum discatur*."—*Ruhnken*, in his charming and profound delineation of the perfect critic, thus speaks of Mathematical pursuits, in connexion with Classical:— " Geometria animum a sensibus ad ea, quæ mente contuemur, intelligenda traducit, acuitque in vero judicando. Et quisquam dubitabit, quin, qui hac disciplina ingenium subegerit, etiam in literis nostris, acutius cernat iis, qui nunquam attigerint pulverem eruditum? Hemsterhusio quid Geometria profuerit, sciunt, qui vel scripta ejus cognorint, vel sermones. Quicquid ex ore exibat, quicquid literis mandabatur, etiam in critico genere, facile prodebat ingenium adsuetum geometricæ subtilitati. Nihil sumebat temere, sed a certo cognitis et perspicuis via et ratione progrediebatur ad ea, quæ inde necessaria consecutione efficerentur."

P. 23.] In our notions of uniting the Professorial and Tutorial systems, we conceive that appointed Tutors might examine duly, and daily, the proficiency of each Professor's pupils. And thus a division of labour would be effected. The appointed Tutors and Sub-instructors to any particular Professor in any particular department of knowledge, might be furnished with, and instructed in the system of the Professor, and might thus, without great difficulty, examine the progress of Professors' pupils. Each pupil should be compelled to give, by writing and answers, substantial proofs of his gradual proficiency in the branch of knowledge required. Oral lectures alone, unaccompanied by exercises and examinations, for each Professor's pupil, will no more teach Science, than listening to the theory of hops and capers, in an easy chair, without practising the steps, could enable any human being to acquire the art of dancing.—See JARDINE, passim.

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